

What is claimed is:

1. An apparatus for controlling cooling of a gantry having a linear motor comprising:

a stator provided with a first temperature sensor, having a heat sink and a cooling fan at predetermined portions of an X-axis and an Y-axis linear motors;

a mover provided with a second temperature sensor, having a heat sink installed on the upper surface of an X-axis and a Y-axis linear motors;

an encoder for sensing a position and velocity of the mover;

an encoder periphery sensor part for measuring surroundings (a temperature, a humidity and a pressure) of the encoder;

an A/D converter for receiving a first and a second temperature signals and converting them from an analog signal to a digital signal and outputting the same;

20 a controller for controlling a drive signal  
outputted from a mover driver unit to control the  
velocity of the Y-axis linear motor and the X-axis  
linear motor;

25 a D/V converter for converting digital signals, that is, a cooling fan control signal and an air valve control signal to a plurality of drive signals, that is, analog signals; and

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a mover driver for providing the drive signal to a coil block.

2. The apparatus according to claim 1, wherein  
5 the encoder includes an indication member for indicating a position information of a mover and an optical sensor for reading the position information of the mover as indicated at the indication member.

3. The apparatus according to claim 1, wherein  
10 the mover includes an air nozzle installed at a predetermined distance and connected with the air valve to cool the mover at one side thereof.

4. A method for controlling cooling of a gantry  
15 comprising the steps of:

operating at least one mover;  
measuring temperatures of an X-axis and a Y-axis  
20 stators ( $T_{xs}$ ,  $T_{ys}$ ) by means of temperature sensors;  
measuring temperatures of an X-axis and a Y-axis  
movers ( $T_{xm}$ ,  $T_{ym}$ ) by means of temperature sensors;  
storing the measured temperature ( $T_{xs}$ ,  $T_{ys}$ ,  $T_{xm}$   
25 and  $T_{ym}$ ) on the stators and movers and comparing them with the pre-set temperature, that is, the comparative value;  
storing the temperature information ( $T_{xs}$ ,  $T_{ys}$ ,  $T_{xm}$   
and  $T_{ym}$ ), comparing them with the comparative value of the pre-set temperature, and computing a difference

between them in case that the temperatures (Tx<sub>s</sub>, T<sub>y</sub><sub>s</sub>, Tx<sub>m</sub> and T<sub>y</sub><sub>m</sub>) are greater than the pre-set comparative value;

computing a temperature gain corresponding to the  
5 computed temperature difference; and

driving a first and a second cooling fans 14a and  
14b and an air valve 33 as long as the temperature gain,  
to perform cooling.

10 5. A method for controlling cooling of a gantry comprising the steps of:

operating a mover;

measuring a position and a velocity of an encoder;

15 measuring peripheral environment (temperature, humidity and pressure;

measuring temperatures of an X-axis and a Y-axis stators (Tx<sub>s</sub>, T<sub>y</sub><sub>s</sub>) and temperature of X-axis and a Y-axis movers (Tx<sub>m</sub>, T<sub>y</sub><sub>m</sub>);

20 storing the measured the values of the temperature information (Tx<sub>s</sub>, T<sub>y</sub><sub>s</sub>, Tx<sub>m</sub>, T<sub>y</sub><sub>m</sub>) and comparing them with a pre-set comparative value;

computing a temperature difference in case that the measured values of the temperature information (Tx<sub>s</sub>, T<sub>y</sub><sub>s</sub>, Tx<sub>m</sub>, T<sub>y</sub><sub>m</sub>) are greater than the comparative value;

25 computing a temperature gain;

driving a first and a second cooling fans and an air valve;

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comparing again the values of the temperature information (Tx<sub>s</sub>, Ty<sub>s</sub>, T<sub>sm</sub>, T<sub>ym</sub>) and the comparative value, after cooling; and

5 correcting the movement command to the movers in case that the values of the temperature information (Tx<sub>s</sub>, Ty<sub>s</sub>, T<sub>sm</sub>, T<sub>ym</sub>) are greater than the comparative value.

6. The method according to claim 5, wherein, in the step of comparing again the values of the 10 temperature information (Tx<sub>s</sub>, Ty<sub>s</sub>, T<sub>sm</sub>, T<sub>ym</sub>) and the comparative value, in case that the values of the temperature information (Tx<sub>s</sub>, Ty<sub>s</sub>, T<sub>sm</sub>, T<sub>ym</sub>) are smaller than the comparative value upon comparing, it returns to the step for measuring a position and a velocity of an 15 encoder

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